might, with advantage, have been devoted to these subjects.

Dr. Beard gives, in his opening chapter, a concise statement of the views associated with the names of Lamarck, Spencer, Darwin and Wallace, and Weismann. The following chapter, on heredity, deals in turn with Galton's law, Weismann's theory of the germ plasm and with germinal continuity. The third chapter discusses Mendelism, biometry, and the mutation theory of De Vries. Dr. Beard's views can be best summarised by quoting the statement at the head of the concluding chapter—

"The phenomena of heredity and genetic variation appertain to the germ-cells, that is, they are germinal in nature. All ancestry passes through a continuous line of germ-cells, and never through the cells of the individual (somatic cells) containing the germ-cells. An 'inheritance of acquired characters' is impossible, for there is no handing on of anything. The individual is merely a terminal and lateral offshoot. In the higher animals direct development, a building up of the individual, and a somatic origin of germ-cells, do not exist. . . . The formation of an individual is a mere incident in a certain chain of events."

He concludes by stating his belief that unconscious memory, in Hering's sense, is sufficient to account for heredity as exhibited by living things, and that if this be recognised "much that has been imagined becomes, not merely futile, but an unnecessary multiplication of causes."

Prof. Moore has given an interesting account of the functions of many of the different kinds of cells of the body, for instance, the leucocytes, the red blood-cells and their adaptation of form to their special functions, the intestinal cells and their secretion, the ductless glands and internal secretions, &c. Clearly written explanations, as free from technicalities as possible, are given of many of the new terms used in modern medical science, *e.g.* agglutinins, antibodies, opsonins, precipitins, antisera, hormones, &c.

The chapter on tropical diseases is much too short. The only diseases considered are malaria and sleeping sickness, and the account of the former contains a considerable number of imperfect or inaccurate statements. The following occur on one page (144) (1): "The mosquito was found to develop a special cycle of the malarial parasite in the glands of the stomach," which is a very loose statement of the matter; nothing is said of the presence of the parasites in the salivary glands of the mosquito, or of their mode of entry into a new human host. (2) The changes in the organism of malaria which take place in the mosquito are designated "certain preliminary stages of development," which surely gives but a faint idea of the fundamental changes which actually occur. (3) Mosquitoes do not deposit larvæ, as asserted, but lay eggs. (4) It is stated that the larvæ, "in order to develop further, must at a certain period ascend to the air at the surface of the water"; as a matter of fact they must ascend periodically, and in most cases frequently, in order to obtain the necessary air. Laveran is not Italian, as stated on p. 143, and the first trypanosome in a European was described by Dutton, not Dalton (p. 145). We should have thought that the recent campaigns against Stegomyia (not Stegomya, p. 144) and yellow fever were worthy of more than casual mention, and that several other tropical diseases were of sufficient general interest to make reference to them desirable. Figures of Anopheles and a tsetse-fly would have been helpful to the reader.

In the short chapter on public health, the author shows how the general health of the community has improved, and urges the necessity for segregation of, and vigilance regarding, cases of consumption.

Dr. Harrison outlines in an interesting manner the chief phases of development of anthropology; the origin of man, of inventions, of civilisation, and of the races of man, are discussed, and an account is given of the races of Europe and of Britain. The article is illustrated by several excellent photographs and a number of coloured and line drawings.

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## OUR BOOK SHELF.

*The Niger and the West Sudan, or the West African's Notebook. A Vade Mecum containing Hints and Suggestions as to what is Required by Britons in West Africa, together with Historical and Anthropological Notes, and Easy Hausa Phrases Used in Everyday Conversation.* By Captain A. J. N. Tremearne. Pp. viii+151. (London: Hodder and Stoughton, and A. H. Wheeler and Co., n.d.) Price 6*s.* net.

This book is written by a former Hausa scholar of Cambridge, who is also a doctor in anthropology, and the work is the result, seemingly, of some years' residence in Nigeria, with visits to the British colonies *en route*. It contains a good many vocabularies of English-Hausa interspersed amongst the chapters, and some of these will no doubt be of much use to officials and travellers residing in or visiting these regions. There is a great deal of general information about British West Africa, but little evidence of independent research on the part of the author, while the quotations with which the book is studded are of a somewhat ancient and well-worn character. Some recent French and German works (historical, geographical, anthropological, &c.) are overlooked, though they throw a new light on the ancient history of British possessions in West Africa, as well as of the adjacent regions under other flags.

A somewhat contemptuous attitude is taken up with regard to the educated negro, which seems to be derived less from the author's own observation and experience than from the pessimistic views expressed by writers and travellers of half or a quarter of a century ago. In reference to the youth trained at Government or missionary schools—in Sierra Leone, for example—the author seems to be quite unaware of the part played by these intelligent and active young men—engineers, artisans, clerks, &c.—in the opening up of the interior of that colony, or in like manner of the Gold Coast.

In drawing up a list of societies and institutions which may be of use to the African official or student, the writer of this book omits all mention of the African Society, which is surely one of the most useful, for its journal contains the best and latest information on West African subjects. The portion of the work which deals with the Hausa people (chiefly by quotations) possesses some interest, but contains fantastical notions, original and borrowed, which may only mislead the student, such as, for example, the suggested derivation of Hausa from Habeshi

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(Abyssinian). Nevertheless the book under review sums up in small compass much of the interest of northern Nigeria.

*Lehrbuch der allgemeinen Pflanzengeographie, nach entwickelungs-geschichtlichen und physiologisch-ökologischen Gesichtspunkten.* Bearbeitet von Prof. P. Graebner. Mit beiträgen von Prof. P. Ascherson. Pp. viii+303. (Leipzig: Quelle and Meyer, 1910.) Price 8 marks.

No branch of botany has advanced more rapidly in the last quarter of a century than the study of plant geography or distribution. Although the foundations were laid by Humboldt (1805), de Candolle (1855), and Grisebach (1872), much of the impetus is due to the influence of the already classical works of Warming and Schimper, and to the valuable contributions by Dr. Engler; further, the numerous recent papers devoted to the descriptions of vegetation in all parts of the world have provided additional data for establishing general principles.

Plant geography presents the two main aspects of distribution in space and distribution in time. The former has received more attention, and provides the sole topic of most books on the subject. Dr. Graebner has devoted a third part of his book to an account of development in past geological ages and in historical times. This provides a serviceable epitome, although some of the statements—as, for instance, the suggested aquatic habit of the Sphenophyllaceæ—are questionable. The discussion of events in the Tertiary and Glacial periods leads up to such matters as plant migrations, centres of distribution, origin of new species, variation, casuals, aliens, and colonists. Distribution in space is taken in two sections, of which the first relates to floristic kingdoms, the second to ecological conceptions. The consideration of the subject from these two points of view would serve a useful purpose if the advantage was not discounted by the excessive condensation necessitated. The description of causes influencing plant distribution in the present day contains a store of details gleaned from scattered papers, and provides much material for elaboration. Very little space is apportioned to the account of plant formations; their classification is based upon the paucity or richness of the available food supply in the soil. Numerous references to original publications are supplied in the footnotes, which it would seem worth while to collect into an appended classified bibliography.

*The Natural History of Coal.* By E. A. Newell Arber. Pp. x+163. (Cambridge: University Press, 1911.) Price 1*s.* net.

WITHIN the narrow compass of this little volume, which forms one of "The Cambridge Manuals of Science and Literature," Mr. Newell Arber has condensed a great amount of solid information with respect to the nature of coal, and much speculation with regard to its probable mode of formation. Perhaps the most notable feature of the work is the emphasis which it lays on the fact that "coal" is merely a group-name, applied popularly to a number of carbonaceous substances, very varied in character and doubtless very diverse in origin. No one mode of formation is applicable to all coal. If it can be proved in a particular case that the vegetation from which the coal was originally formed must have grown on the spot where it is now found, we are by no means justified in denying that in other cases the vegetable *débris* may have been drifted to its present site.

The author holds that each group of coal-bearing rocks, even each seam of coal, must be studied and judged on its own merits. The material from which coal has been formed he calls "the mother-substance of coal"—an expression not to be confused with the term "mother of coal," which has long been applied, perhaps not very appropriately, to the substance known otherwise as mineral charcoal. Mr. Arber discusses, with much command of his subject, the character of the coal-forming vegetation, the mode in which its relics accumulated, and the changes to which they have been subjected in the process of coal-making.

The view which regards the formation of palæozoic coal as having been comparatively rapid finds favour with the author, whilst doubt is thrown on the popular "peat-to-anthracite theory." As to the vexed question of the climate of Upper Carboniferous times, Mr. Arber hesitates, for apparently good reason, to term it tropical.

*Eine Botanische Tropenreise. Indo-Malayische Vegetationsbilder und Reiseskizzen.* By Prof. G. Haberlandt. Zweite Auflage. Pp. viii+296. (Leipzig: W. Engelmann, 1910.) Price 11.60 marks.

THERE is very little change to note in the present edition of Haberlandt's "Botanische Tropenreise" as compared with the original that was published in 1893. A few paragraphs have been inserted here and there, some excellent reproductions from photographs have been added, and three coloured reproductions from water-colour sketches by the author. It would have been unwise to reconstruct the general text, which records the fresh impressions of a first visit to the tropics. The chapters on tropical leaves and trees, lianes, epiphytes, and mangroves are specially instructive, and the bold pencil sketches delineate characters which are not discernible in a photograph.

*Star People.* By Katharine Fay Dewey. With illustration by Frances B. Comstock. Pp. x+232. (London: Longmans, Green, and Co., 1910.) Price 6*s.* net.

SOME of the mythological characters which figure among the constellations are here introduced into a fantastic story. We cannot believe that the original legends have been improved by their setting, or that there is anything particularly inspiring in the association of stars with nonsense talk and a giggling company. Draco is afflicted with a lisp, and is made to say on one occasion "That'th all right. I gueth I can walk with three girlth. I'm long enough!" The constellations are so beautiful and the dramas they represent are so rich in imaginative ideas that we should prefer not to introduce children to either through a story of this kind, which can scarcely be regarded as good literature and is certainly not good science.

*With Nature and a Camera: Being the Adventures and Observations of a Field Naturalist and an Animal Photographer.* By Richard Kearton. Illustrated by 180 pictures from photographs by Cherry Kearton. Popular edition. Pp. xvi+368. (London: Cassell and Co., Ltd., 1911.) Price 5*s.*

ITS re-issue in a cheaper form should increase the already wide popularity of this attractive book. The character of the work was described in NATURE soon after its appearance (vol. lvii., p. 154).

*British Birds in Their Haunts.* By the late Rev. C. A. Johns. Twelfth edition, with 16 coloured plates. Pp. xxxii+626. (London: Society for Promoting Christian Knowledge, 1911.) Price 5*s.*

A BOOK which has reached its twelfth edition needs no commendation. It is evident that its clearly expressed descriptions have proved of real assistance to students of bird-life.

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